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REPORT

SUBJECT Description and Operating Instructions for the Instrument Type 126I Designed for Checking the Electronic Components of the RP-1 (SCAN ODD) Radar

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THIS IS UNEVALUATED INFORMATION. SOURCE GRADINGS ARE DEFINITIVE. APPRAISAL OF CONTENT IS TENTATIVE.

Type 126I Instrument: Description and Operating Instructions, 8 pages of text, in English, describing an instrument for checking the magnetron and crystal currents and all voltages supplying the RP-1, plus a photograph of the instruments and a key diagram.

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INFORMATION REPORT INFORMATION REPORT

TYPE 126H INSTRUMENT

DESCRIPTION AND OPERATING INSTRUCTIONS

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1. PURPOSE

Type 126M instrument is designed for checking the magnetron and crystal 2 currents and all the voltages supplying the station of the PII-1 type. It serves also for manual control of the klystron frequency and receiver channel.

Three cables are supplied with the instrument to connect latter to the station.

II. CONNECTION DIAGRAM AND DESIGN

Type 126M instrument is designed as a flat box (plate 1). The instrument front panel mounts the following measuring control devices

... Type BA-4 (V-1) voltammeter, measuring:

- (a) aircraft mains voltage +27 V;
- (b) inverter voltage 115 V, 400 c.p.s.;
- (c) output voltages of the rectifiers +300 V st., +200 V, ± 150 V, -150 V st., -150 V st.;
- (d) magnetron current;
- (e) crystal 2 current.

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B. Type BK-1 packet-type switch with the following inscriptions:

- (1) 27 V, (2) 115 V, (3) TV, (4) TK-2, (5) +300 V st.,
- (6) +230 V, (7) +150 V, (8) -150 V st., (9) +230 V.
- (10) +150 V at.

C. Potentiometer knob GAIN (VOLTS.).

D. Potentiometer knob TUNING (FACILP.).

E. Types BK-1 and BK-2 toggle switches with the inscriptions: MANUAL (PUSH.) and AUTOMATIC (ABTCH.).

Three plug connectors arranged on the bottom of the instrument serve to connect it to the AP18-5 unit and 159K instrument.

Key diagram of type 126H instrument is shown in Fig.3.

The rated value of the measured characteristic is shown on the instrument pointer settling at division 20 of the instrument scale.

III OPERATING INSTRUCTIONS

To measure supply voltage or magnetron and crystal 2 currents, the packet switch should be set to the appropriate position.

If the measured voltages correspond to the rated values, the instrument pointer will settle at division 20 of the scale, (within ± 1.5 of the scale division for 115 V 400 c.p.s.

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stabilized rectified voltage, and ± 2.5 divisions for the other voltages, at a temperature of $20^{\circ} \pm 5^{\circ}\text{C}$).

While measuring crystal 2 current whose value is within 0.2 - 0.8 mA, the instrument pointer should deflect within from 4.5 ± 1 to 14 ± 1.5 scale divisions.

While measuring magnetron current whose value is within 10 - 14 mA, the instrument pointer should deflect within from 20 to 27.5 ± 2.5 scale divisions.

Deflection of the instrument pointer in either direction at least in one position of the switch shows that the BA-46 meter operates properly.

If the instrument does not give any indications or the supply circuit being measured shows signs of external damage, check the voltage and current of the above circuit by the voltmeter according to Table 1.

Should any trouble be detected, disconnect the cables and check the condition of the circuits.

To check the operation of automatic gain control, measure the voltage across test plug receptacle 7 of the AP18-3 unit by the voltmeter. The voltage should change within not less than 0 - 7 volts.

To check the operation of the automatic tuning control, connect a valve voltmeter to contact 3 of the AP18-5 unit terminal board. The voltage should change within from -5 V to -120 V ± 5 V.

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Table 1

No.	Voltage	Points of measurement in AP18-5 unit terminal board
1	+27 V	2 and 1
2	115 V 400 c.p.s	5 and fuse 5 unit 4
	+230 V	11 and 1
	+300 V st.	8 and 1
	+150 V	9 and 1
	-150 V st.	10 and 1

IV. ROUTINE MAINTENANCE

Routine maintenance of type 126H instrument is performed after every 100 hours of operation but at least once in 6 months by the personnel servicing the type AP-18 measuring equipment. The routine maintenance is carried out under the supervision of a radio technician who is also responsible for registration of all maintenance operations performed on the equipment as well as for keeping the Service Log. The Service Log should contain the results of test measurements of the instrument characteristics and also the data concerning the number of hours the instrument has been in operation. Routine maintenance is performed as follows.

Make an external inspection of the instrument. Type

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the instrument with a clean rag. Touch up with black varnish the damaged coating on the front panel and case. Make sure that the packet-type switch is reliably fixed in all its positions. Clean the contacts of the packet-type switch, if necessary. For this purpose remove the instrument from its case and clean the packet-type switch contacts with a brush, moistened in alcohol. Then check the instrument circuitry using the following procedure.

For all the tests use Diagrams 1 and 2:

- (a) Note the deflection of the instrument pointer while checking the following voltages: +27 V; 115 V; +300 V st.; +230 V; +150 V; +150 V st.; -150 V s.

The pointer should deflect within the limits specified in the table below:

Voltage to be checked	Positions of switch required for the check	Pointer deflection	Permissible deviations depending on temperature	
			t=20°C ±5°C	t= -40°C +55°C
+27 V ±10%	+27 V	20 divisions	±2.5 div.	±3.5 div.
115 V ±3%	115 V	ditto	±1.5 div.	±2.5 div.
300 V st. ±5%	+300 V st.	ditto	±1.5 div.	±3 div.
230 V ±10%	+230 V	ditto	±2.5 div.	±3.5 div.

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Voltage to be checked	Positions of switch required for the check	Pointer deflection	Permissible Deviations depending on temperature	
			$t = 20^{\circ}\text{C}$ $\pm 5^{\circ}\text{C}$	$t = -40^{\circ}\text{C}$ $+50^{\circ}\text{C}$
$\pm 10\%$	+150 V	20 divisions	± 1.5 div.	± 3.5 div.
± 100 V st. $\pm 5\%$	+150 V st.	ditto	± 1.5 div.	± 3 div.
± 100 V st. $\pm 5\%$	-150 V st.	ditto	± 1.5 div.	± 3 div.

- (b) Set the packet type switch to position TK-2; this should cause the instrument pointer to deflect within from 4. ± 1 divisions to 14 ± 1.5 divisions, when the crystal current is within 0.2 - 0.8 mA.
- (c) Set the packet type switch to position TM; this should cause the instrument pointer to deflect within from 20 to 27.5 ± 2.5 divisions, when the magnetron current is within 10 - 14 mA.
- (d) Turning knob G IN (manual gain control), with the BK-1 toggle switch in position MANUAL, make sure that the voltage across pin 5 of the LP-2 plug connector changes within not less than 6-7 volts (relative to earth).

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(c) Turning knob TUNING (manual control of clystron frequency), with the BK-2 toggle switch in position MANUAL, make sure that the voltage across pin 6 of the LP-2 plug connector changes within from -80 to -120 V ± 5 V.

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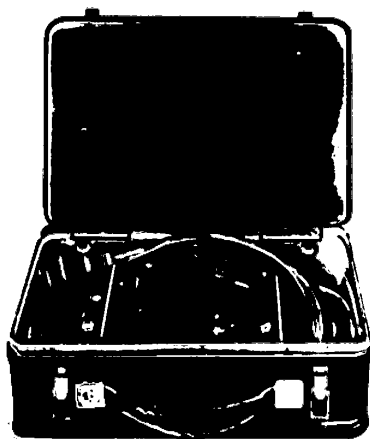


Fig. 1. Type 126M Instrument. General View

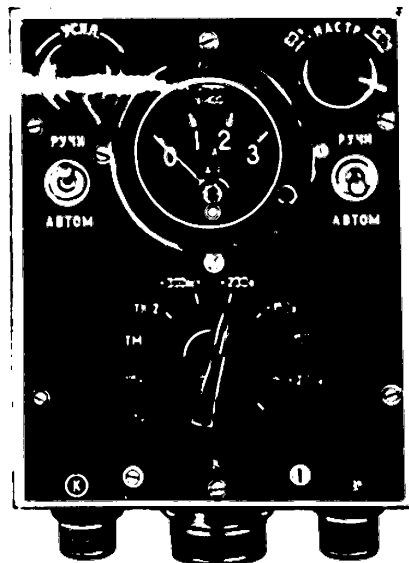


Fig. 2. Front Panel of Type 126M Instrument

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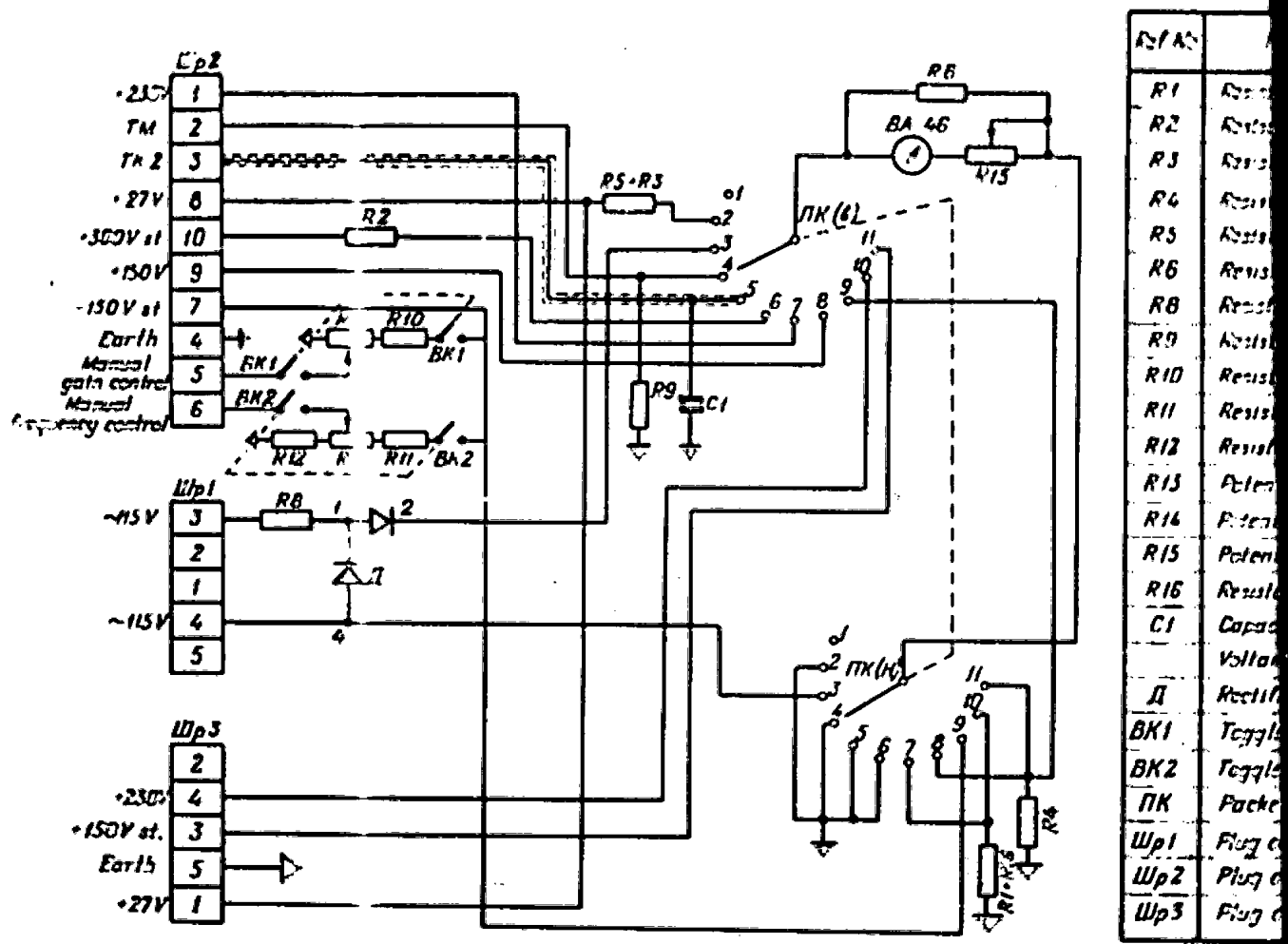
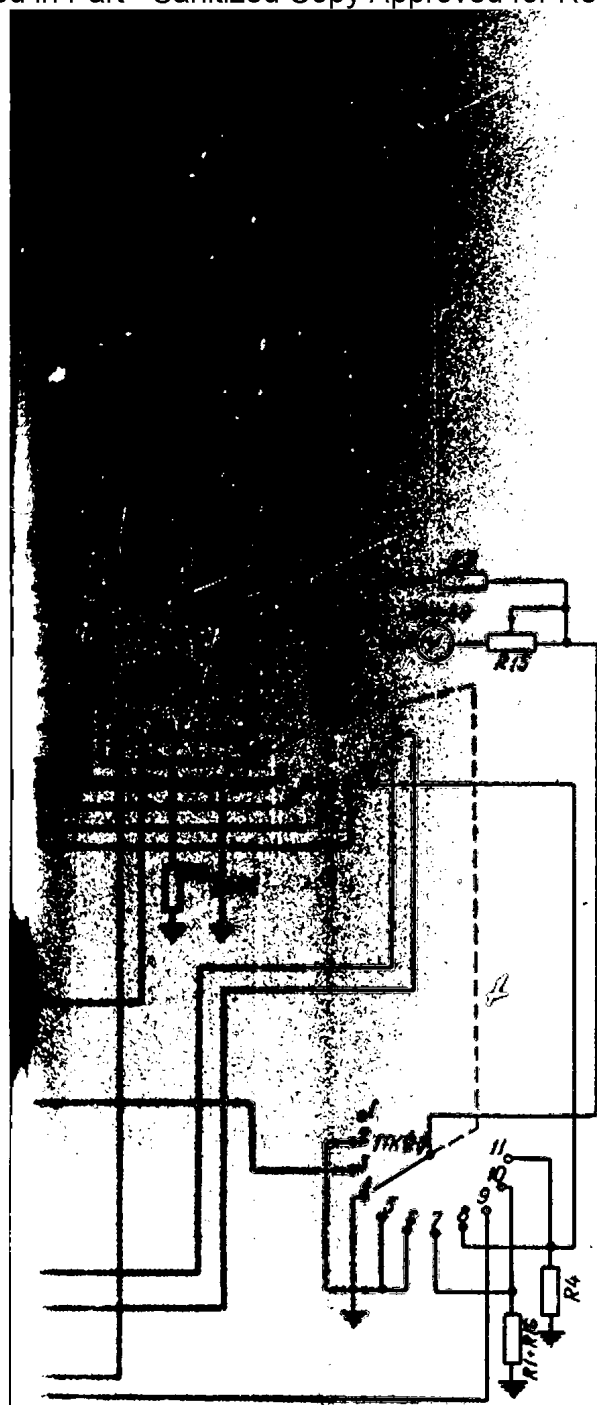


Fig.3. Key Diagram of Type 126M Instrument

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LIST OF COMPONENTS

Ref.No	Name of part and description	Rated values	Quantity
R1	Resistor, type ПТ-1-0.22-16	220,000 ohms	1
R2	Resistor, type ПТ-1-0.3-1-6	300,000 ohms	1
R3	Resistor, type ПТ-0.5-10,000 ohms ± 1%	10,000 ohms	1
R4	Resistor, type ПТ-1-0.15-1-6	150,000 ohms	1
R5	Resistor, type ПТ-0.5-10,000 ohms ± 1%	16,000 ohms	1
R6	Resistor, copper, 175 ohms ± 1%	175 ohms	1
R8	Resistor, type ПТ-1-0.047-11-6	47,000 ohms	1
R9	Resistor, copper, 17.5 ohms ± 1%	17.5 ohms	1
R10	Resistor, type BC-0.25-1-0.27-1	270,000 ohms	1
R11	Resistor, type BC-0.25-1-6800-1	6,800 ohms	1
R12	Resistor, type BC-0.25-0.024-1	24,000 ohms	1
R13	Potentiometer, type ПП3-12-20,000 ohms ± 10%	20,000 ohms	1
R14	Potentiometer, type ПП3-12-20,000 ohms ± 10%	20,000 ohms	1
R15	Potentiometer, type ПП3-11-510,000 ohms ± 10%	510,000 ohms	1
R16	Resistor, type ПТ-0.5-0.01-10%	10,000 ohms	1
C1	Capacitor, type KCO-5-500-6-1000-III	10,000 μF	1
	Voltammeter, type BA-46	100 μA	1
Д	Rectifier, copper-oxide, type BK-07-14		1
BK1	Toggle switch, type BTO 360 00/TV		1
BK2	Toggle switch, type BTO 360 00/TV		1
ПК	Packet-type switch, 11 П 2Н		1
Шр1	Plug connector, type ШР20П53Ш10		1
Шр2	Plug connector, type ШР32П103Ш1		1
Шр3	Plug connector, type ШР20П53Ш10		1

Fig. 3. Key Diagram of Type 126V Instrument

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